

### REMARKS

Claims 1-3 and 4-9, 11-14, 16-19, 26, 28-30, 35-42, and 44-46 were pending. Applicants have canceled claims 4-9, 11-14, 16-19, 26, 28-30, 35-42, and 44-46, without prejudice to continued prosecution. Applicants respectfully request reconsideration and withdrawal of the restriction requirement for reasons previously set forth.

Applicants thank the Examiner for the courtesy of a personal interview on March 24, 2004, in which the status of the case was generally discussed.

Applicants have amended claims 1-3 and added new dependent claims 47-54. Support for these amendments and for new claims 47-54 can be found throughout the specification, e.g., at page 8, lines 24-27, at page 10, lines 9-28 and at page 15, Tables 1-3. No new matter has been added by these amendments. Applicants respectfully request reconsideration and allowance of claims 1-3 and 47-54 in view of the following remarks.

#### Rejection under 35 U.S.C. §112, second paragraph

The Examiner rejected claims 1-3 under 35 U.S.C. 112, second paragraph, for failure to particularly point out and distinctly claim the subject matter regarded as the invention. Applicants respectfully traverse with respect to these claims as amended.

Claims 1-3 have been amended to recite that the claimed nucleic acids comprise a delta-12 fatty acid desaturase coding sequence. Claims 1-3 have also been amended to remove the recitation that the claimed nucleic acid is from Brassicaceae or Helianthus. In view of these amendments, it is believed that claims 1-3 clearly point out and distinctly claim the invention. The Examiner is requested to withdraw the rejection of claims 1-3 under 35 U.S.C. § 112, second paragraph.

#### Rejection under 35 U.S.C. §112, first paragraph

The Examiner rejected claims 1-3 under 35 U.S.C. §112, first paragraph, for lack of written description. The Examiner asserted that it is unclear what the structural characteristics or

function would be of a nucleic acid sequence that may be as small as 10 nucleotides and how this mutated sequence would render the desaturase gene non-functional. The Examiner also asserted that the specification lacks written description with regard to the structural and physical characteristics of the claimed nucleic acids.

Applicants respectfully traverse with respect to the amended claims. Claims 1-3 have been amended to remove the recitation that the nucleic acids are at least 20 nucleotides in length. Rather, these claims recite that the nucleic acids comprise a delta-12 fatty acid desaturase coding sequence.

Claims 1-3 as amended have adequate written description in the specification. The specification provides the amino acid sequences of delta-12 fatty acid desaturases in SEQ ID NOS: 1, 5, 9 and 13. The specification states that mutations in His-Xaa-Xaa-Xaa-His amino acid motifs of delta-12 fatty acid desaturases are preferred. See, specification at page 11, lines 25-29. The specification discloses particular examples of such motifs, including HECGH, HRRHH, and HVAHH. See, specification at page 13, lines 11-13. The specification provides specific embodiments in SEQ ID NOS: 3 and 11 of mutations in a His-Xaa-Xaa-Xaa-His amino acid motif of a desaturase. Thus, the specification clearly provides structural and physical characteristics of the claimed invention. The Examiner is requested to withdraw the rejection under 35 U.S.C. §112, first paragraph, for lack of written description.

#### Rejection under 35 U.S.C. §102(b)

The Examiner rejected claims 1-3 under 35 U.S.C. §102(b) as anticipated by the BRL Catalog and Reference Guide, 1989, p. 61. Applicants respectfully traverse.

Claims 1-3, as amended, are directed to nucleic acids comprising a delta-12 desaturase coding sequence. The BRL catalog does not teach delta-12 desaturase coding sequences, nor does it teach mutations in delta-12 desaturase coding sequences. Therefore, the BRL catalog does not anticipate amended claims 1-3. The Examiner is respectfully requested to withdraw the rejection under 35 U.S.C. §102(b).

Rejection under 35 U.S.C. §102(e)/ 103(a)

Claims 1-3 stand rejected under 35 U.S.C. §102(e) as being anticipated by, or alternatively under 35 U.S.C. §103(a) as being obvious over Lightner et al., U.S. Patent 6,372,965 ("Lightner"). The Examiner asserted that Lightner, in columns 13-14, teaches a cloned nucleic acid from a Brassicaceae comprising a disrupted delta-12 desaturase gene. Applicants respectfully traverse.

The Arabidopsis delta-12 desaturase nucleic acid taught by Lightner at columns 13-15 differs from the claimed nucleic acids. Lightner discloses that the genomic desaturase DNA differs from the desaturase cDNA by the presence of an intron between nucleotides 88-89 of the cDNA. See, Lightner at column 14, line 65 to column 15, line 2. Additionally, Lightner states that the disruption in the delta-12 desaturase gene was in a region upstream of the coding sequence rather than in a coding sequence itself. See, Lightner at column 15, lines 19-22.

In contrast to Lightner, pending claim 1 is directed to nucleic acids having a mutation in a coding sequence, specifically, a mutation in a His-Xaa-Xaa-Xaa-His amino acid motif. Thus, the claimed invention is not anticipated by the disclosure at columns 13-15 of Lightner.

Nor does the disclosure at columns 13-15 of Lightner render the claimed invention patentably obvious. The disclosure at columns 13-15 refers to a wild-type Arabidopsis delta-12 desaturase nucleic acid; there is no suggestion that mutations in a delta-12 desaturase coding sequence should be isolated, let alone mutations specifically in a His-Xaa-Xaa-Xaa-His amino acid motif.

The Examiner's attention is directed to column 29, lines 43-49, of Lightner, which discloses a mutation in a delta-12 desaturase gene. For the reasons discussed below, the subject matter at column 29, lines 43-49, does not qualify as prior art.

The application that matured into the Lightner patent was filed in the United States on August 14, 1998, and is a continuation of Application No. 08/262,401 (the '401 application). The '401 application was filed on June 20, 1994. The presently claimed invention was reduced

to practice before June 20, 1994, as evidenced by the enclosed Declaration of Guo-Hua Miao (the Miao Declaration). Dr. Miao is a named inventor on the instant application.

Dr. Miao carried out sequencing experiments in this country on delta-12 fatty acid desaturase DNA from canola line IMC 129. See, Miao Declaration at paragraph 5. Dr. Miao's sequencing efforts showed that the amino acid at residue 106 of a IMC 129 delta-12 fatty acid desaturase had been mutated relative to a wild-type delta-12 fatty acid desaturase of the Westar variety. The mutation at residue 106 introduced a lysine in the IMC 129 coding sequence in place of the glutamic acid present in the Westar coding sequence. See, Miao Declaration at paragraph 6.

Amino acid residue 106 is within a His-Xaa-Xaa-Xaa-His amino acid motif, specifically, a His-Glu-Cys-Gly-His motif. See, specification at page 15, Table 1.

Dr. Miao's sequencing experiments were carried out in this country prior to June 20, 1994, the effective filing date for the Lightner patent. Therefore, Applicants submit that the subject matter at column 29, lines 43-49, of the Lightner patent does not qualify as prior art to the instant claims. In view of the above, Applicants request withdrawal of the rejection of claims 1-3 under 35 U.S.C. §102(e)/ 103(a).

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CONCLUSION

Applicants respectfully request reconsideration and allowance of claims 1-3 and 47-54 in light of the amendments and remarks above. Enclosed is a \$950.00 check for the Petition for Extension of Time fee. Please apply any other charges or credits to deposit account 06-1050.

Respectfully submitted,

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